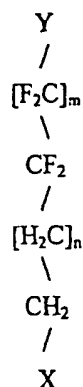


CLAIMS:

1. A method of fabricating a self-assembled monolayer of a substance on a substrate comprising depositing the substance on the substrate using compressed carbon dioxide as the solvent medium for the substance.
2. A method as claimed in claim 1, wherein the pressure and/or temperature of the compressed carbon dioxide is/are selectively controlled so as to enhance the density of the self-assembled monolayer on the substrate.
3. A method as claimed in claim 1 or 2 comprising the use of a co-solvent in combination with the compressed carbon dioxide.
4. A method as claimed in claim 3, wherein the co-solvent comprises at least one of H<sub>2</sub>O, CH<sub>3</sub>OH, CF<sub>3</sub>OH, CF<sub>3</sub>CH<sub>2</sub>OH, CF<sub>3</sub>CF<sub>2</sub>OH, (CF<sub>3</sub>)<sub>2</sub>CHOH, CH<sub>4</sub>, C<sub>2</sub>H<sub>4</sub>, C<sub>2</sub>F<sub>6</sub>, CHF<sub>3</sub>, CClF<sub>3</sub>, C<sub>2</sub>H<sub>6</sub>, SF<sub>6</sub>, Propylene, Propane, NH<sub>3</sub>, Pentane, <sup>1</sup>PrOH, MeOH, EtOH, <sup>1</sup>BuOH, Benzene, Pyridine.
5. A method as claimed in any one of claims 1 to 4, wherein the substrate comprises a metallic substance.
6. A method as claimed in claim 5, wherein the metallic substance comprises at least one of gold, silver, copper, iron, mercury, palladium, gallium arsenide, ferrous oxide, indium tin oxide.

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7. A method as claimed in claim 6, wherein the substance comprises a semi-fluorinated sulphur containing compound of the formula:



Where X comprises R-SH, RS-SR or R-S-R, where R denotes the rest of the molecule;

Y comprises a functional group; and

m and n denote respectively the number of fluorinated and non-fluorinated carbon atoms.

8. A method as claimed in claim 7, wherein X comprises a disulphide of sulphur.
9. A method as claimed in claim 7 or 8, wherein X comprises a thiol.
10. A method as claimed in any one of claims 7 to 9, wherein Y comprises a  $CF_3$  functional group.
11. A method as claimed in any one of claims 7 to 10, wherein m and n lie within the range of 1 to 20.
12. A method as claimed in claim 11, wherein m and n lie within the range of 5 to 10.
13. A method as claimed in claim 12, where m is 8 and n is 10.

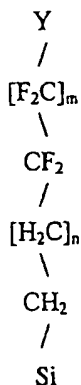
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14. A method as claimed in any one of claims 7 to 13, wherein Y further comprises at least one of vinyl, styryl, acryloyl, methacryloyl or alkyne in combination with a spacer group.

15. A method as claimed in claim 14, wherein the spacer group comprises at least one of  $\text{CH}_2$  or  $\text{CF}_2$ .

16. A method as claimed in any one of claims 1 to 5, wherein the substrate comprises at least one of glass, mica,  $\text{SiO}_2$ ,  $\text{Al}_2\text{O}_3$ , or  $\text{Ga}_2\text{O}_3$ .

17. A method as claimed in claim 16, wherein the substance comprises a semi-fluorinated silane derivative of the formula:



where Y comprises a functional group; and

m and n denote respectively the number of fluorinated and non-fluorinated carbon atoms.

18. A method as claimed in 17, wherein Si comprises a trialkoxy derivative.

19. A method as claimed in claim 18, wherein Si comprises at least one of  $\text{SiCl}_3$ ,  $\text{Si}(\text{OCH}_3)_3$ ,  $\text{Si}(\text{OCH}_2\text{CH}_3)_3$ ,  $\text{Si}(\text{OCH}_3)_2\text{Cl}$  or  $\text{Si}(\text{CH}_2\text{CH}_3)_2\text{Cl}$ .

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20. A method as claimed in any one of claims 17 to 19, wherein Y comprises a  $\text{CF}_3$  functional group.

21. A method as claimed in any one of claims 17 to 19, wherein m and n lie within the range of 1 to 20.

22. A method as claimed in claim 21, wherein m and n lie within the range of 5 to 10.

23. A method as claimed in claim 22, wherein m is 6 and n is 1.

24. A method as claimed in any one of claims 17 to 23, wherein Y further comprises at least one of vinyl, styryl, acryloyl, methacryloyl or alkyne in combination with a spacer group.

25. A method as claimed in claim 24, wherein the spacer group comprises at least one of  $\text{CH}_2$  or  $\text{CF}_2$ .

26. A method as claimed in any one of the preceding claims, wherein the self-assembled monolayer has an ellipsometry thickness of about  $30\text{\AA}$  and a water contact angle of about  $110^\circ$ .

27. An inkjet head comprising a self-assembled monolayer as claimed in any one of claims 1 to 15 or claim 26, when appendant to any one of claims 1 to 15.

28. An electronic, optical or optoelectronic device comprising a self-assembled monolayer as claimed in any one of claims 1 to 5 or claims 16 to 26 or claim 26 when appendant to any one of claims 1 to 5, or 16 to 25.

29. A device as claimed in claim 28 comprising a thin film transistor or an organic semiconductor device, or a light emitting diode.

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30. A device as claimed in claim 29, wherein the light emitting diode comprises an organic polymer light emitting diode.

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